CLAIMS:

1. A method of cleaning at least one surface (10) of an optical device (14) disposed in a vacuum chamber (12), which device is at least partially contaminated by atoms and/or ions (20) of metalloid and/or metal introduced by a radiation source (18) generating, in particular, extreme ultraviolet radiation and/or soft X-rays (16), characterized in that a temperature prevailing on the surface (10) and/or a pressure in the vacuum chamber (12) is adjusted such that the atoms and/or ions (20) hitting the surface (10) can move on said surface.

2. A method as claimed in claim 1, characterized in that the temperature of the surface (10) is set in a range from around 200°C to around 600°C.

3. A method as claimed in claim 1 or 2, characterized in that at least the surface (10) of the optical device (14) is heated or cooled.

4. A method as claimed in claim 1, characterized in that the atoms and/or ions (20) that can move on the surface (10) are halted and collected at at least one obstacle (22) whose positioning can be predetermined.

5. A method as claimed in claim 4, characterized in that the obstacle (22) is an elevation (24) or a recess (26).

6. A method as claimed in claim 5, characterized in that the elevation (24) takes, for example, a strip-like, cylindrical or peg-like shape.

7. A method as claimed in claim 5 or 6, characterized in that the elevation (24) is arranged so as to run approximately or fully parallel with the rays (16) along the surface (10).

8. A method as claimed in any one of claims 5 to 7, characterized in that the elevation (24) is produced from, for example, copper, nickel or a different material promoting the formation of accumulations (34).

9. A method as claimed in any one of claims 5 to 8, characterized in that the elevation (24) is applied to the surface (10) of the optical device (14) by, for example, a CVD process.

10. A method as claimed in claim 5, characterized in that the recess (26) takes the form of a slot or groove or is executed as a hole.

11. A method as claimed in claim 5 or 10, characterized in that the recess (26) is produced by, for example, a photochemical process or by laser treatment.

12. A method as claimed in any one of claims 5 to 11, characterized in that a distance (28) in a range from a few μm to roughly one millimeter exists between the elevations (24) and/or recesses (26).

13. A method as claimed in any one of claims 1 to 12, characterized in that the atoms and/or ions (20) accumulated at the obstacle (28) are removed from the surface (10) of the optical device (14), e.g. by a chemical process.

14. A method as claimed in any one of claims 1 to 13, characterized in that the surface (10) is provided with a coating.

15. A method as claimed in claim 14, characterized in that the coating is executed with a layer thickness of up to approximately 0.5 nm.

16. An appliance for cleaning at least one surface (10) of an optical device (14) disposed in a vacuum chamber (12), which device is at least partially contaminated by atoms and/or ions (20) of metalloid and/or metal introduced by a radiation source (18) generating, in particular, extreme ultraviolet radiation and/or soft X-rays (16), characterized in that a temperature prevailing on the surface (10) and/or a pressure in the vacuum chamber (12) is

adjustable by means of control devices (30, 32) such that the atoms and/or ions (20) hitting the surface (10) can move on said surface.

17. An appliance as claimed in claim 16, characterized in that the temperature of the surface (10) is adjustable over a range from around 200°C to around 600°C.

18. An appliance as claimed in claim 16 or 17, characterized in that at least the surface (10) of the optical device (14) can be heated or cooled.

19. An appliance as claimed in claim 16, characterized by at least one obstacle (22), with predetermined positioning on the surface (10), for halting and collecting the atoms and/or ions (20).

20. An appliance as claimed in claim 19, characterized in that the obstacle (22) is an elevation (24) or a recess (26).

21. An appliance as claimed in claim 20, characterized in that the elevation (24) takes, for example, a strip-like, cylindrical or peg-like shape.

22. An appliance as claimed in claim 20 or 21, characterized in that the elevation (24) is arranged so as to run approximately or fully parallel with the rays (16) along the surface (10).

23. An appliance as claimed in any one of claims 20 to 22, characterized in that the elevation (24) is produced from, for example, copper, nickel or a different material promoting the formation of accumulations (34).

24. An appliance as claimed in any one of claims 20 to 23, characterized in that the elevation (24) is applied to the surface (10) of the optical device (14) by, for example, a CVD process.

25. An appliance as claimed in claim 20, characterized in that the recess (26) takes the form of a slot or groove or is executed as a hole.

26. An appliance as claimed in claim 20 or 25, characterized in that the recess (26) is produced by, for example, a photochemical process or by laser treatment.

27. An appliance as claimed in any one of claims 20 to 26, characterized in that a distance (28) in a range from a few μm to roughly one millimeter exists between the elevations (24) and/or recesses (26).

28. An appliance as claimed in any one of claims 16 to 27, characterized in that the atoms and/or ions (20) accumulated at the obstacle (22) can be removed from the surface (10) of the optical device (14), e.g. by a chemical process.

29. An appliance as claimed in any one of claims 16 to 28, characterized in that the surface (10) is provided with a coating.

30. An appliance as claimed in claim 29, characterized in that the coating is up to approximately 0.5 nm thick.